Amendments to the Specification

IN THE WRITTEN DESCRIPTION

Please replace paragraph [0002] with the following amended paragraph:

[0002] In packaging bags made of synthetic resin films that have been used for sealing ~~the contents~~its contents, such as food products requiring heat treatment, the following measures have been taken to remove the contents after the heat treatment of the packaging bag having the contents inserted therein.

Please replace paragraphs [0011]-[0016] with the following amended paragraphs:

[0011] The following problems were associated with the above-described conventional packaging bags. Since a portion of the sealing zone is open, when liquid is present in the bag, it readily flows out of the bag. When holes are provided in advance in the sealing zone, the inside of the bag is linked to the atmosphere and bacteria easily penetrate therein. When a portion of the sealing zone is made so as to be easily opened because of the difference in melting point, sealing temperature, or sealing width, the opening process is easily destabilized depending on the temperature increase pattern, the opening zone is increased~~,~~ and the pressure inside the bag is difficult to maintain. Automatic bag manufacture and packaging employing a rolled film is difficult to conduct if the sealing zone requires processing.

[0012] Another problem associated with the above-described conventional packaging bags was that when the packaging bags were heated in a microwave oven, water contained in the bag contents, such as food products, turned to steam, the steam filled the bag, while increasing the internal pressure, the temperature of the film surface rose accordingly, and the

packaging bag that was just removed from the microwave oven was very difficult to open by bare hand.

[0013] It is an object of the present invention to resolve the above-described problems and to provide a packaging material suitable for packaging bags in which a small hole is formed in the film and undergoes cyclic expansion and contraction depending on the amount of generated steam, thereby maintaining the internal pressure at a level of no less than the normal pressure. Another object of the present invention is to provide a packaging material using a thermally insulating flexible sheet for the surface, thereby making it possible to hold by bare hands the product immediately after the contents thereof were heated to a high temperature.

[0014] The present invention ~~according to claim 1~~ relates to a packaging material using a film laminate in which a heat sealing agent with a low melting point is applied to a prescribed zone of an oriented film made of a synthetic resin, a cutting line is cut in the oriented film made of a synthetic resin in the form of a solid or broken line passing through the zone coated with the heat sealing agent, and a cast film made of a synthetic resin and having heat sealing properties is affixed to the oriented film made of a synthetic resin. The packaging material in accordance with the present invention will be described hereinbelow with reference to a case in which it is used for a packaging bag. The bag body is formed by placing the cast film made of a synthetic resin on the inner side and a product is obtained by inserting food and the like into the bag body. When such a packaging bag is heated in a microwave oven, water contained in the bag contents, such as food, turns to steam, the inside of the bag is filled with this steam and the internal pressure is raised. The film temperature is raised ~~according~~accordingly, the sealing agent with a low melting point is melted and liquefied, and the laminate strength between the oriented film substrate and the cast film serving as a sealant is greatly reduced in the zone where the sealing agent with a low melting

point was coated. The sealant in the zone where the sealing agent with a low melting point was coated below the cutting line of the oriented film is freely extended and expanded in the direction of stress acting perpendicular to the cutting line as the internal pressure is increased. However, in the zone that was not coated with the sealing agent with a low melting point, the laminate strength between the oriented film substrate and the sealant is high, free extension and expansion are impossible, the sealant is partially cut and a small hole is formed at the boundary. Since the sealant is constituted of the cast film and has ~~rubber~~a rubbery elasticity, the small hole undergoes repeated expansion and shrinkage depending on the amount of generated steam and the internal pressure can be adjusted, while the contents are appropriately heated.

[0015] The present invention according to claim 2 relates to a packaging material using a film laminate in which a release agent is applied to a prescribed zone of an oriented film made of a synthetic resin, a cutting line is cut in the oriented film made of a synthetic resin in the form of a solid or broken line passing through the zone coated with the release agent, and a cast film made of a synthetic resin and having heat sealing properties is affixed to the oriented film made of a synthetic resin. When a packaging bag fabricated from such materials in the same manner as from the packaging material ~~of claim 1~~above is heated in a microwave oven, water contained in the contents thereof, such as food, turns to steam, the inside of the bag is filled with this steam, and the internal pressure is increased. The film temperature is raised accordingly and the sealant is softened. The sealant in the zone where the release agent was coated under the cutting line of the oriented film is freely extended and expanded in the direction of stress acting perpendicular to the cutting line as the internal pressure is increased. However, in the zone that was not coated with the release agent, the laminate strength between the oriented film substrate and the sealant

is high, free extension and expansion are impossible, the laminate is partially cut and a small hole is formed at the boundary. Since the sealant is made of a cast film and has a rubber elasticity, the small hole undergoes repeated expansion and shrinkage depending on the amount of generated steam and the internal pressure can be adjusted.

[0016] The oriented film may be a uniaxially oriented film or biaxially oriented film. The uniaxially oriented film is difficult to extend in the longitudinal or lateral direction thereof. The biaxially oriented film is difficult to extend in both the longitudinal direction and lateral direction thereof and is used for the substrate because of its excellent mechanical suitability for printing and lamination.

Please replace paragraph [0020] with the following amended paragraph:

[0020] The present invention ~~according to claim 3~~ relates to a packaging material ~~according to claim 1 or claim 2~~, in which a thermally insulating flexible sheet is placed on the surface of the oriented film made of a synthetic resin and affixed thereto partially or over the entire surface. The packaging bag using such a material has functions similar to those of the packaging material in accordance with the present invention ~~as described in claim 1 or claim 2~~ and can be used for heating the contents thereof. In the course of heating, the function of adjusting the internal pressure due to the formation of a small hole is not impeded because the thermally insulating flexible sheet is porous and therefore it tends to form local cleavage. Furthermore, the thermally insulating flexible sheet affixed onto the surface has a very low thermal conductivity. Therefore, it has a function of thermally insulating heat generated inside the packaging bag. Therefore, the bag can be handled with bare hands even immediately after heating in a microwave oven, except the zone around the vapor blow-out portion.

Please replace paragraphs [0022]-[0025] with the following amended paragraphs:

[0022] The present invention ~~described in claim 4~~ provides a packaging material using a film laminate in which a cutting line is cut in the form of a solid or broken line in a cast film made of a synthetic resin and having heat sealing properties and a thermally insulating flexible sheet is placed on the surface thereof and affixed thereto partially or over the entire surface.

[0023] When the packaging bag using such a material is heated in a microwave oven, water contained in the contents thereof, such as food, turns to steam, the inside of the bag is filled with this steam, and the internal pressure is increased. The film temperature is raised accordingly and the sealant is softened. The cast film at the inner side extends and expands in ~~the~~a direction perpendicular to the cutting line as the internal pressure is increased. However, since the thermally insulating flexible sheet affixed to the outer side is difficult to extend, a counteraction is created to a force which acts to cause extension and expansion in the above-mentioned perpendicular direction of the cast film on the cutting line on the adhesive surface. Subsequent increase in the internal pressure produces local cleavage in the thermally insulating flexible sheet located at the outer side and the internal pressure can be adjusted by releasing steam therefrom to the outside.

[0024] The invention ~~according to claim 5~~ relates to a packaging material ~~as described in any one of claims 1 to 4~~, which comprises a cover provided with an excess portion, a container having the cover affixed thereto with a heat seal, and a flap in which the excess portion dangles from the upper end of the container, wherein the end portion of the flap is adhesively bonded to the container. Bonding of the flap to the container may be conducted at the side surface of the container or at the bottom surface thereof. A heat seal or an adhesive is used for pasting. A specific feature of such a

material is that the amount of information about the product can be greatly increased by printing the trade name or properties on the flap.

[0025] The invention ~~of claim 6~~ relates to a packaged product in which processed food, various foods, medical instruments or containers are airtight sealed with the packaging material ~~described in any one of claims 1 to 5~~.

Please replace paragraph [0027] with the following amended paragraph:

[0027] FIG. 1 is a perspective view illustrating an embodiment of the present invention ~~of claims 1 and 2~~.

Please replace paragraph [0035] with the following amended paragraph:

[0035] FIG. 9 is a perspective view illustrating an embodiment of the present invention ~~of claim 3;~~.

Please replace paragraphs [0037]-[0042] with the following amended paragraphs:

[0037] FIG. 11 is a perspective view illustrating the state in which the packaging bag using the material in accordance with the invention ~~of claim 3~~ is heated.

[0038] FIG. 12 is a perspective view illustrating a state in which heating of the packaging bag using the material in accordance with the invention ~~of claim 3~~ is continued.

[0039] FIG. 13 is a cross-sectional view along XIII-XIII in FIG. 12.

[0040] FIG. 14 is a perspective view illustrating a state in which heating of the packaging bag using the material in accordance with the invention ~~of claim 3~~ is further continued.

[0041] FIG. 15 is a cross-sectional view illustrating an embodiment of the present invention ~~of claim 4;~~.

[0042] FIG. 16 is a perspective view illustrating the state in which the packaging bag using the material in accordance with the invention ~~of claim 4~~ is heated~~;~~.

Please replace paragraphs [0046] and [0047] with the following amended paragraphs:

[0046] FIG. 20 illustrates an embodiment in which the material of the invention ~~described in claim 5~~ is employed as a container cover.

[0047] FIG. 21 is a perspective view illustrating an example of a packaging container using the invention ~~of claim 6~~.

Please replace paragraph [0050] with the following amended paragraph:

[0050] FIG. 1 is a perspective view illustrating an embodiment of the packaging bag fabricated by employing the packaging material ~~described in claim 1~~. FIG. 2 is a cross-sectional view along II-II in FIG. 1. A packaging bag 1, as shown in FIG. 2, was fabricated of an oriented film 2 made of a synthetic resin and a cast film 3 made of a synthetic resin and having heat sealing properties, the cast film 3 being located on the inner side.

Please replace paragraphs [0052]-[0056] with the following amended paragraphs:

[0052] Then the cast film 3 made of a synthetic resin and having heat sealing properties is placed onto the back side of the oriented film 2 coated with the heat sealing agent 4 having a low melting point and having the cutting line 5 cut therein and the oriented film 2 and cast film 3 are bonded to each other with an adhesive. Furthermore, the left and right sides overlap over a very small width, a longitudinal bonded portion 6 is formed by heat sealing, and a flat tubular shape is obtained. Then, a lateral bonded portion 7 is formed by heat sealing of the front side of the tube in ~~the~~a direction perpendicular to the longitudinal bonded portion 6, as shown in FIG. 1. The formation of the packaging bag 1 with a non-bonded upper edge, as shown in FIG. 1, is thus completed.

[0053] Contents 8 (see FIG. 2), such as foods, various food products, medical instruments, or the like, are inserted into the packaging bag 1 from the non-bonded edge side thereof, and if a lateral bonded portion 9 at the upper side shown in FIG. 1 is then formed by heat sealing, the contents 8 are tightly sealed in the packaging bag 1 fabricated by laminating the oriented film 2 and cast film 3.

[0054] A release agent ~~described in claim 2~~ may be used instead of the heat-sealing agent 4 as the above-described coating agent applied to the prescribed zone of the oriented film 2.

[0055] The process implemented when the packaging bag 1 thus containing the contents 8 in a tightly sealed state is put in a microwave oven and heated therein will be described below.

[0056] If the packaging bag 1 is put in a microwave oven and heated therein, water contained in the contents 8 is evaporated, producing steam 10, as shown in FIG. 4, and the steam is mixed with air, thereby raising the pressure inside the packaging bag 1. As a result, the cast film 3 starts to extend in ~~the~~a direction perpendicular to the cutting line 5, as shown in FIG. 3 and FIG. 4, while pushing and expanding the oriented film 2 affixed to the outer side.

Please replace paragraph [0058] with the following amended paragraph:

[0058] The cast film 3 tends to further extend even after the oriented film 2 ~~started~~starts to open, but only the zone coated with the heat sealing agent 4 or release agent undergoes stretching, whereas other, non-coated portions do not extend. As a result, stresses are concentrated on the boundary between the zone coated with the heat sealing agent 4 or release agent and the zone that has not been coated and will lead to the formation of a small hole 11 in the cast film 3 at both ends of the zone where the cutting line 5 has opened, as shown in FIG. 7.

Please replace paragraphs [0063] and [0064] with the following amended paragraphs:

[0063] When the amount of water in contents 8 is low, if an auxiliary water pad containing water is placed in the packaging bag, water lost during heating is replenished and ~~the~~a sufficient steaming effect is obtained.

[0064] FIG. 9 is a perspective view illustrating an embodiment of the invention ~~described in claim 3~~ relating to a packaging bag. FIG. 10 is a cross-sectional view along X-X in FIG. 9. A packaging bag 12 in accordance with the present invention, as shown in FIG. 10, is fabricated by laminating a thermally insulating flexible sheet 13, an oriented film 2 made of a synthetic resin, and a cast film 3 made of a synthetic resin and having heat sealing properties so as to obtain a three-layer structure.

Please replace paragraphs [0066] and [0067] with the following amended paragraphs:

[0066] On such an arranged oriented film 2, coated from the back side thereof with the heat sealing agent 4 with a low melting point and having a cutting line 5 cut therein, and the thermally insulating flexible sheet 13, the cast film 3 made of a synthetic resin and having heat sealing properties is placed from the side of the oriented film 2 and then the oriented film 2 and cast film 3 are bonded to each other with an adhesive. Furthermore, the left and right sides are overlapped over a very small width, a longitudinal bonded portion 6 is formed by heat-sealing and a flat tubular-shape bag is obtained. Then, a lateral bonded portion 7 is formed by heat sealing of the front side of the bag in the direction perpendicular to the longitudinal bonded portion 6, as shown in FIG. 9. The formation of the packaging bag 12 with a non-bonded upper edge, as shown in FIG. 9, ~~it~~is thus completed.

[0067] Contents 8 (see FIG. 10), such as foods, various food products, medical instruments, or the like, are inserted into a packaging bag 12 from the non-bonded edge side thereof, and

if a lateral bonded portion 9 at the upper side shown in FIG. 9 is then formed by heat sealing, the contents 8 are tightly sealed with the packaging bag 12 fabricated by laminating a thermally insulating flexible sheet 13, oriented film 2, and cast film 3.

Please replace paragraphs [0070]-[0072] with the following amended paragraphs:

[0070] If the packaging bag 12 is put in a microwave oven and heated therein, water contained in the contents 8 is evaporated, producing steam 10, as shown in FIG. 13, and the steam is mixed with air, thereby raising the pressure inside the packaging bag 12. As a result, the cast film 3 starts to extend in ~~thea~~ direction perpendicular to the cutting line 5, as shown in FIG. 14, while expanding the oriented film 2 bonded as an interlayer and the thermally insulating flexible sheet 13 located at the outer side.

[0071] Since the pressure inside the packaging bag 12 further rises, the cut portion 5 of the oriented film 2 expands and a rift appears in the thermally insulating flexible sheet 13 located at the outer side and bonded to the oriented film. Furthermore, as the extending region of the cast film 3 expands, separation of the oriented film 2 and the cast film 3 starts from the coated zone as a result of melting of the heat sealing agent 4 with a low melting point in case it was coated or because of low friction property of the release agent in case it was coated, the cutting line 5 in the zone coated with the heat sealing agent 4 or release agent breaks, as shown in FIG. 14, and the thermally insulating flexible sheet 13 in FIG. 11, and the oriented film 2 start to open.

[0072] The cast film 3 tends to extend even after the thermally insulating flexible sheet 13 and oriented film 2 ~~started~~start to open, but only the zone coated with the heat sealing agent 4 or release agent undergoes stretching, whereas other, non-coated portions do not extend. As a result,

stresses are concentrated on the boundary between the zone coated with the heat sealing agent 4 or release agent and the zone that was not coated therewith and will lead to the formation of a small hole 11 in the cast film 3 at both ends of the zone where the cutting line 5 was opened, as shown in FIG. 14. At this time, the distance between the apex (a) of the inverted arrow tip (see FIG. 9) and the bag seal edge (b) (see FIG. 9) is preferably 0.2-0.3L, where L stands for a bag width (FIG. 12).

Please replace paragraphs [0074]-[0078] with the following amended paragraphs:

[0074] If the small hole 11 is closed, the pressure inside the packaging bag 12 rises again, the cast film 3 extends, the small hole 11 increases in size, and the steam 10 present inside the packaging bag 12 is again released to the outside, thereby reducing the pressure inside the packaging bag 12.

[0075] Thus, because of expansion and shrinkage of the small hole 11, the rise and fall of the pressure inside the packaging bag 12 are repeated, the pressure inside the packaging bag 12 is maintained with a high stability within a constant range above the normal pressure, and the heating time is shortened by comparison with the conventional process.

[0076] When the amount of water in contents 8 is low, if an auxiliary water pad containing water is placed in the packaging bag, water lost during heating is replenished and ~~the~~a sufficient steaming effect is obtained.

[0077] FIG. 15 is a cross-sectional view illustrating an embodiment of the invention ~~described in claim 4~~ relating to a packaging bag. A packaging bag 14 in accordance with the present invention, as shown in FIG. 15, is fabricated by laminating a thermally insulating flexible sheet 13 and a cast film 3 made of a synthetic resin and having heat sealing properties so as to obtain a two-layer structure.

[0078] Thus, the cast film 3 made of a synthetic resin and having heat sealing properties that was provided with a

cutting line 5 is laminated on the thermally insulating flexible sheet 13, and the thermally insulating flexible sheet 13 and cast film 3 are bonded to each other with an adhesive, etc. Furthermore, the left and right sides are overlapped over a small width, a longitudinal bonded portion 6 is formed by heat sealing and a flat tubular shape flag is obtained. Then, a lateral bonded portion 7 is formed by heat sealing of the front side of the tube in ~~the~~a direction perpendicular to the longitudinal bonded portion 6, as shown in FIG. 16. The formation of the packaging bag 14 with a non-bonded upper edge, as shown in FIG. 16, is thus completed.

Please replace paragraphs [0081] and [0082] with the following amended paragraphs:

[0081] If the packaging bag 14 is put in a microwave oven, etc. and heated therein, water contained in the contents 8 is evaporated, producing steam 10, as shown in FIG. 17, and the steam is mixed with air, thereby raising the pressure inside the packaging bag 14. As a result, the cast film 3 starts to extend in ~~the~~a direction perpendicular to the cutting line 5, as shown in FIG. 16 and FIG. 17, while expanding the thermally insulating flexible sheet 13 located at the outer side.

[0082] Since the pressure inside the packaging bag 14 further rises, the cut portion 5 of the cast film 3 expands and a rift appears in the thermally insulating flexible sheet 13 located at the outer side. Furthermore, since the cut portion 5 of the cast film 3 expands in ~~the~~a perpendicular direction, the thermally insulating flexible sheet 13 starts to open.

Please replace paragraph [0086] with the following amended paragraph:

[0086] When the amount of water in the contents 8 is low, if an auxiliary water pad containing water is placed in the packaging bag, water lost during heating is replenished and ~~the~~ sufficient steaming effect is obtained.

Please replace paragraphs [0113]-[0118] with the following amended paragraphs:

[0013] The invention ~~of claim 1 and claim 2~~ makes it possible to maintain the internal steam pressure during heating at an almost constant level higher than the normal pressure. Therefore, the heating time can be shortened. A small hole can be formed at ~~the~~portions other than the heat seal portion, the contents do not leak to the outside during heating, and automatic packaging can be readily conducted by the product manufacturers.

[0014] In addition ~~to the effects produced by the invention of claim 1 and claim 2~~, the invention ~~of claim 3~~ makes it possible to hold the packaging bag with bare hands immediately after heating because of the function of the thermally insulating flexible sheet.

[0115] The invention ~~of claim 4 produces the same effects as the invention of claim 3 and~~ also makes it possible to manufacture a packaging bag rapidly and at a low cost.

[0116] The invention ~~of claim 5~~ makes it possible to seal fluid or semi-fluid materials as the contents and to supply the packaged materials to market.

[0117] Furthermore, the product information can be placed not only on the cover portion of the packaging container but also on the body thereof.

[0118] The invention ~~of claim 6~~ provides a packaged product that can be heated in a microwave oven in a sealed state. Therefore, the packaged product can be used in an easy and sanitary manner in convenience stores, side dish markets, medical institutions or the like.